AMENDMENTS TO THE SPECIFICATION

Please amend the text, page 1, line 26, bridging through to page 2, line 11, as follows:

If the channel impulse response is known, a suitable Tomlinson-Harashima precoder can be used in the transmitter, and can eliminate the need for the DFE in the receiver. Precoders of this sort are described by Wei, for example, in an article entitled, "Generalized Square and Hexagonal Constellations for Intersymbol-Interference Channels with Generalized Tomlinson-Harashima Precoders," published in *IEEE Transactions on Communications*, ~~42:9~~ 42:9 (September, 1994), pp. 2713-2721, which is incorporated herein by reference. The precoder in this context is intended to compensate for inter-symbol interference caused by a channel having an equivalent discrete-time response expressed as

$$1+\sum_{i=1}^{k} h_i Z^{-i} .$$

Please amend the text, page 3, line 30, bridging through to page 4, line 20, as follows:

U.S. Patents 5,513,216 and 5,604,769, whose disclosures are incorporated herein by reference, describe a hybrid equalizer arrangement of this sort, using a DFE in the receiver in conjunction with a precoder in the transmitter. The DFE includes both an ISI DFE part and a noise-predictive DFE part. Signals received from the transmitter are first processed by a FFE and are then decoded by a Tomlinson-Harashima modulo decoder. The resultant decoded signals are processed by the DFE in conjunction with a slicer in order to recover the transmitted symbols. The ISI DFE coefficients are conveyed back for implementation in the precoder. The noise-predictive part of the DFE ~~main~~ may remain active or, alternatively, the noise-predictive coefficients may be implemented in the precoder, as well. Assuming the adapted ISI DFE response to be I(z), and the noise-predictive DFE response to be N(z), the filter response in the feedback loop of the precoder is set to be C(z) = [1 + I(z)]·[1 + N(Z)] - 1. When variations occur in the channel characteristics, new coefficients may be determined at the DFE in a "quick retrain" procedure. These coefficients can then be conveyed back to the transmitter for implementation in the precoder.

Please move page 5, line 1, to page 4.

Please amend the text, page 8, line 20, bridging through to page 9, line 14, as follows:

In a preferred embodiment, the Tomlinson-Harashima precoder includes a feedback loop filter having a filter response DFET(z), and wherein the adaptive filter includes a decision feedback equalizer having an equalizer response DFE(z) and an error predictor having an error prediction response EP(z), and wherein after the indication of the coefficients is conveyed to the transmitter, an updated filter response DFET'(z) is implemented in the feedback loop filter substantially as given by DFET'(z) = [1+DFET(z)][1+DFE(z){1-EP(z)}-EP(z)]-1. Preferably, after the updated filter response is implemented in the feedback loop filter, the equalizer response DFE(z) and the error prediction response EP(z) are set to zero. Further preferably, the FFE has an adaptively-determined feed-forward response FFE(z), and the error predictor includes a finite impulse response filter ~~have~~ having a number of taps N, and when the indication of the coefficients is conveyed to the transmitter for implementation in the precoder, an updated feed-forward response FFE'(z) is implemented in the FFE substantially as given by FFE'(z) = FFE(z)(1-EP(z^N)). Additionally or alternatively, the feedback loop filter includes a finite impulse response filter having a predetermined number of taps, and a time-domain representation of the updated filter response DFET'(z) is adjusted so as to implement the updated filter response using the predetermined number of taps.

Please move page 14, line 1, to page 13.

Please move page 15, line 1, to page 14.

Please amend the text, page 17, line 28 through to page 18, line 11, as follows:

As can be seen in Fig. 3, decision block 54 has no direct effect on the samples $\theta(n)$ that are input to decoder 26 and decision device 52. Rather, decision block 54 is used only for adaptively determining error prediction coefficients EP(z) and decision feedback equalization coefficients DFE(z), which are then implemented in feedback loop filter 16 of transmitter 10 (Fig.

1). For this purpose, the decision block receives forward-equalized samples $\theta(n)$ without prior modulo decoding. Therefore, decision block 54 must comprise an extended slicer 56, with a dynamic range sufficient to handle the entire constellation of possible values of the input samples to receiver 50, unlike decision device 52 which is limited to the range [-M,M). (The notation [-M,M) is conventionally known in the art to indicate that the lower bound –M is included in the range, while the upper bound M is not included.) The other elements of decision block 54, including an adaptive DFE 58, error predictor 64 and adders 60, 62 and 66, must similarly be configured with sufficient dynamic range and resolution to handle this constellation.

Please amend the text, page 23, lines 1-20, as follows:

Fig. 5 is a block diagram that schematically illustrates a receiver 90, in accordance with another preferred embodiment of the present invention. This receiver is similar to receiver 50 shown in Fig. 3, except that decision block 54 is used both to generate the adaptive DFE and error prediction coefficients and to process the samples $\theta(n)$ before they are input to decoder 26. Receiver 90 can be used to receive signals from transmitter 10 and to convey adaptive filter coefficients to the transmitter in substantially the same manner as ~~can~~ receiver 50. Receiver 90 has the advantage over receiver 50 of being less sensitive to short-term variations in the channel characteristics, particularly noise, since DFE 58 and error predictor 64 adapt to correct for these variations even when feedback loop filter 16 has not yet been adjusted to compensate for them. On the other hand, because DFE 58 is a part of the decoding path of the output symbols d(n) in receiver 90, there is still some likelihood that the output symbols will be corrupted by error propagation.